

## West Santa Cruz Terrace Groundwater Basin

- Groundwater Basin Number: 3-26
- County: Santa Cruz
- Surface Area: 7867 acres (12 square miles)

### Basin Boundaries and Hydrology

West Santa Cruz Terrace Groundwater Basin includes nearly the entire City of Santa Cruz. It is bounded to the south by Monterey Bay and to the north by a series of hills that define the contact of Quaternary and Pliocene deposits (Purisima Formation). The eastern boundary coincides with the western boundary of the Soquel Creek Water District, and the Soquel Valley Groundwater Basin. The western and northwestern boundaries include Pre-Cretaceous metasedimentary rocks (Jennings 1958). Elevation ranges from near sea level to approximately 100 feet above sea level. The basin is drained by a series of streams flowing southward from the mountains. The largest of these streams is the Lorenzo River. The basin extends northward upstream along the Lorenzo River. The basin boundary confidence is considered low due to undetermined depth of the terrace deposits and the lack of information regarding groundwater occurrence or movement. Average precipitation values range from 25 to 31 inches, increasing northward.

### Hydrogeologic Information

#### ***Water Bearing Formations***

Water-bearing sediments consist of the Pliocene Purisima Formation, Quaternary terrace deposits, and alluvium along the Lorenzo River and other streams crossing the basin. The Purisima Formation is likely the principal aquifer in the eastern portion along the boundary with the Soquel Valley Groundwater Basin (Muir and Johnson 1989, Muir 1980). The Purisima Formation is a thick sequence of highly variable sediments ranging from marine fossiliferous rocks near its base to continental deposits in its upper portion. The sediments are chiefly poorly indurated, moderately permeable gravel, sands, silts and silty clays. The Quaternary alluvium and terrace deposits are thin and yield only minor quantities of groundwater to wells (Muir 1980). Water bearing units are variable across the basin. Based on review of water well drillers reports on file in the San Joaquin District, it appears that much of the basin derives groundwater only from the Quaternary alluvium and terrace deposits. These deposits vary in thickness and lithology over short distances. A report to Santa Cruz City Council meeting on February 29, 2000, made by Carollo Engineers states that, "...groundwater is not a viable water source for the City due to sustainability and reliability issues of the local aquifers."

#### ***Restrictive Structures***

There are no known restrictive structures in the West Santa Cruz Terrace Basin.

### **Recharge Areas**

Recharge is from deep percolation of rainfall, especially near the upper water sheds of the Lorenzo River, and other streams crossing the basin.

### **Groundwater Level Trends**

Groundwater level data was available from San Joaquin District well completion report files and from data in the groundwater level data base. These data were available only for the dates the wells were drilled or, one or two readings. Based on this information, water levels in the basin range from one well that was flowing at the time it was drilled in 1967, to a domestic well drilled in 1999 that had a depth to water of more than 400 feet. Due to the variations in well construction and aquifer geology, depth to water across the basin is highly variable. No conclusions are drawn regarding groundwater level trends.

### **Groundwater Storage**

No information on groundwater storage was found.

### **Groundwater Budget (Type C)**

There is insufficient information to provide an estimate of this basin's budget.

### **Groundwater Quality**

**Characterization.** Data in the San Joaquin District water quality files indicate that the water in the basin is characterized as being predominately calcium-sodium bicarbonate (Ca-Na-HCO<sub>3</sub>). TDS values range from 378 to 684 mg/L, with an average value of 478 (based on 6 wells, 7 analyses). EC values range from 624 to 2,160  $\mu$ mhos/cm, with an average value of 804 (based on 10 wells, 19 analyses).

**Impairments.** Seawater intrusion may be affecting portions of the basin near the coast.

### **Water Quality in Public Supply Wells**

Constituent Group <sup>1</sup>	Number of wells sampled <sup>2</sup>	Number of wells with a concentration above an MCL <sup>3</sup>
Inorganics – Primary	6	0
Radiological	6	0
Nitrates	5	0
Pesticides	5	0
VOCs and SVOCs	5	1
Inorganics – Secondary	6	4

<sup>1</sup> A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

<sup>2</sup> Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

<sup>3</sup> Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water

quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

## Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 11 – 550	Average: 200 (13 wells)
Total depths (ft)		
Domestic	Range: 75 - 565	Average: 245 (29 wells)
Municipal/Irrigation	Range: 71 - 700	Average: 247 (27 wells)

## Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	7

## Basin Management

Groundwater management:	None
Water agencies	
Public	City of Santa Cruz
Private	

## References Cited

- California Department of Water Resources (DWR), San Joaquin District. Well completion report files.
- \_\_\_\_\_. Water quality data files.
- \_\_\_\_\_. Water level data files.
- City of Santa Cruz. 2000. City Council Minutes of February 29, 2000 Special Meeting
- Jennings, Charles W. and Rudolph G. Strand (compilers). 1958. Santa Cruz Sheet of *Geologic Map of California*. California Division of Mines and Geology (CDMG). Scale 1:250,000.
- Muir, K.S., 1980. Seawater Intrusion and Potential Yield of Aquifers in the Soquel-Aptos Area, Santa Cruz County, California; U.S.G.S. Water-Resources Investigation 80-84, 29p.
- Muir, K.S. and Johnson, J.J., 1979. *Classification of Ground-Water Recharge Potential in Three Parts of Santa Cruz County, California*; U.S.G.S. Water-Resources Investigation Open file report 79-1065.

## **Errata**

Changes made to the basin description will be noted here.